

A Phase I Archeological Survey
of a Proposed Construction/Demolition Debris Landfill
and Borrow Pit
on the Fort Knox Military Reservation,
Hardin County, Kentucky

Prepared by

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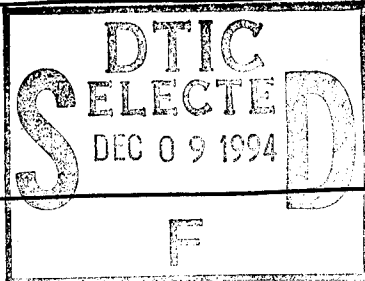
December 1993

Pamela A. Schenian
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ABSTRACT

In November 1993, the Fort Knox Staff Archeologist and Assistant Staff Archeologist conducted a Phase I archeological survey of a proposed landfill and borrow tract. The tract comprises a total of 66.8 ha (165 acres), consisting of a 24 ha (59.8 acres) borrow pit, a 12.1 ha (29.8 acres) expanded landfill pit, and a 28.4 ha (70.2 acres) access area. The entire tract is on the Fort Knox Military Reservation, Hardin County, Kentucky. The proposed landfill expansion area and the area southwest of it had been previously surveyed with negative results. Field observation and drive-by inspection during the current study revealed that these areas were completely disturbed. The borrow pit, which had not been previously surveyed, was field inspected by pedestrian reconnaissance. The survey resulted in the discovery of no archeological materials or deposits. It is recommended that the landfill expansion, borrow pit, and access area be used as proposed.

MANAGEMENT SUMMARY

In accordance with Executive Order 11593 and other applicable federal laws and regulations, a Phase I archaeological study was conducted of a proposed landfill expansion, a borrow pit, and access area on the Fort Knox Military Reservation, Hardin County, Kentucky. A literature search revealed that the proposed landfill expansion and the area to the southwest of it had been previously surveyed with negative results, and field observation during the current study indicated the area was completely disturbed. The proposed borrow pit, which had not been not previously surveyed was inspected by pedestrian reconnaissance, with negative results. It is recommended that the landfill, borrow, and access areas be used as proposed.

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I. INTRODUCTION

In November 1993, the Fort Knox Staff Archeologist and Assistant Staff Archeologist performed a Phase I archeological survey of a proposed landfill expansion and a borrow pit tract at Fort Knox, Hardin County, Kentucky (Figure 1). The proposed landfill, borrow, and access areas are located in Hunting Area 20 and Training Area 13. The landfill expansion is approximately 29.8 acres (12.1 ha) in size (Figures 2 and 3, Table 1). The landfill will be used by the Fort Knox Directorate of Public Works (DPW) to dispose of construction and demolition debris. The borrow pit is approximately 59.8 acres (24 ha) in size (Figure 3; Table 1). It will be used to provide earth to cover the debris deposited in the landfill. The area between the landfill tract and the borrow pit was examined to ascertain if intact cultural materials were present in the area to be traversed by machinery involved in the construction and use of these facilities. The project area (landfill and borrow tract) comprises all the above areas (Figures 1-3). It is bounded on the southwest by Brandenburg Road, on the northwest by Baker Road, on the northeast by a power line that coincided with the northeast end of the proposed borrow area, and on the southeast by a deep ravine and a previously rehabilitated tank training area.

During the period July through August, 1993, the Staff Archeologist obtained copies of all of the state site forms for sites on the Fort Knox installation from the Office of State Archaeology (OSA), University of Kentucky, Lexington, and of all reports of previous investigations on the installation or immediately adjacent to the installation from various sources. She also updated the site files by comparing the cultural resources quadrangle maps against the quadrangles on file at the OSA. All documents necessary to perform Phase I literature searches for the installation are present at the Cultural Resource Management Branch of the Directorate of Public Works, Fort Knox, and no file check was made with the OSA specifically for this project.

A literature search revealed that the southwestern half of the project area had been previously surveyed with negative results. This area is within the quadrant of Hunting Area 20 surveyed by O'Malley et al. (1980). Because the area had been previously surveyed, with negative results, and field inspection during the present project indicated that the surface was completely disturbed, it was not walked during the current study. The proposed borrow pit and the area between it and the landfill tract had not been previously surveyed, and were field inspected by pedestrian reconnaissance in the current study.

The proposed landfill and borrow areas are located in the Plain section of the Pennyryle cultural landscape, on

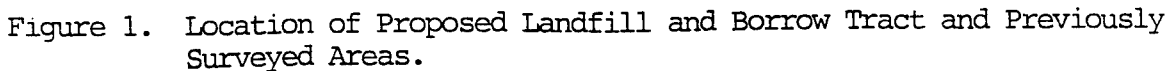


Figure 1. Location of Proposed Landfill and Borrow Tract and Previously Surveyed Areas.

Key to Figures 2 and 3.

--- landfill tract boundary



walked during current survey



disturbed by previous landfill activities--
drive-by inspection



disturbed by previous borrowing and tank training--
drive-by inspection

DIRECTORATE OF ENGINEERING AND HOUSING <small>FORT KNOX, KENTUCKY</small>			
Landfill Area Key Map Const. / Demolition Debris Landfill Ft. Knox, Kentucky			
DATE : January 5, 1993		SCALE: AS SHOWN	
APPROVED :			
Paul E. Frye, Jr. Chief, Engineer Plans & Services		Joseph T. Hutchins Deputy Director	
DRAWN BY: JML	CHECKED BY: LAF	DRAWING NO. FK-389	SHEET 2 of 17
DESIGNED BY: CS	PROJECT NO. DEMA		

Table 1. Key to Figures 2 and 3.

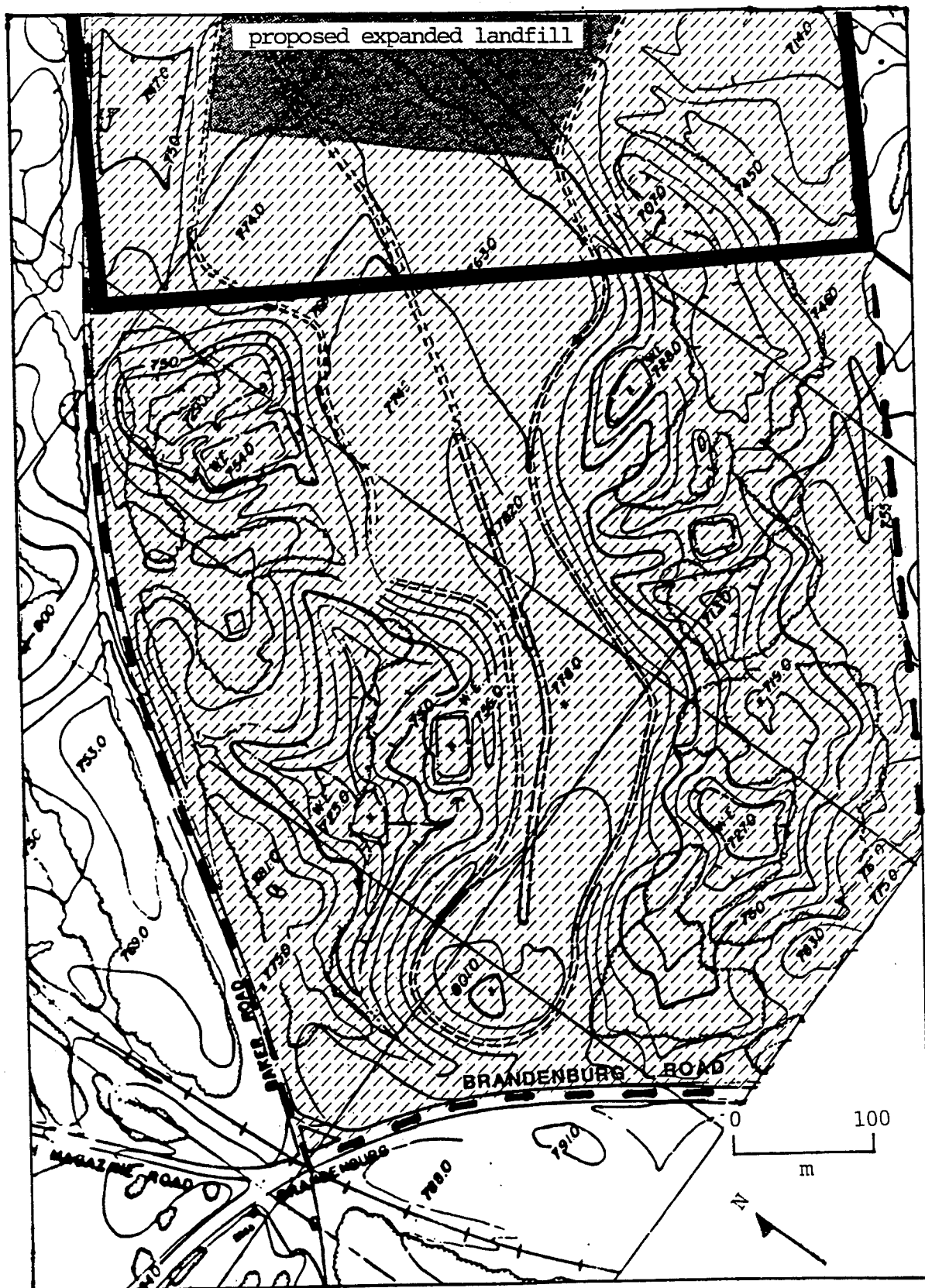


Figure 2. Plan View of Southwest Half of Landfill and Borrow Tract.

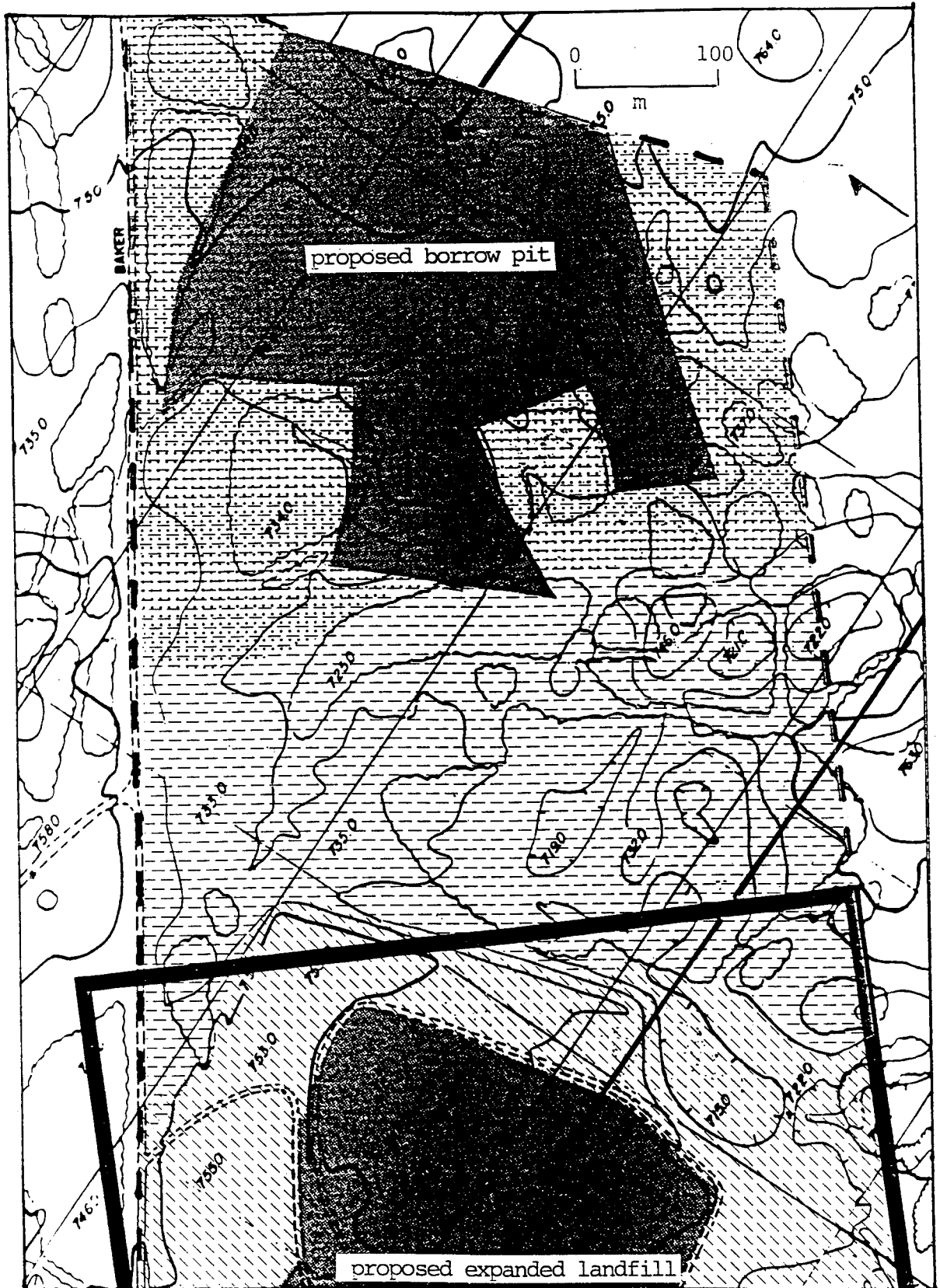


Figure 3. Plan View of Northeast Half of Landfill and Borrow Tract.

the undulating surface of a karstic plain that is riddled with sinkholes. Elevations in the project area range from 720 to 780 feet. Soils in the project area are classified as Criders-Vertrees-Nicholson soil association while soils in (Arms et al. 1979: General Soil Map). Drainage in the project area is underground through the sinkholes. Mill Creek is the closest stream, but direct, above ground tributaries are not present.

The archeological survey was conducted in preparation for the use of the landfill tract for the deposition of construction and demolition debris and the borrow area as a source of earth to cover the debris. The EPA project number is KNO090S041. The archeological survey and literature review were required to comply with the National Environmental Protection Act, or NEPA, (Public Law 91-190), the Historic Preservation Act of 1966, as amended (Public Law 89-665), the Archaeological Resources Protection Act of 1979 (Public Law 96-95), Presidential Executive Order 11593, and Army Regulation 420-40.

The entire project area was inspected on November 23, 1993. A total of four person hours were spent in the survey of the proposed borrow pit and access area. One additional person hour was spent examining the periphery and selected interior portions of the southwestern half of the project area. No artifacts were observed or collected in this survey. Documentation of this project will be curated at the Archeology Laboratory, University of Louisville, on a "permanent loan" basis, under contract number DABT 23-93-C-0093, for curatorial and technical support (copy of contract on file, DPW, Fort Knox, Kentucky). Duplicate copies of the documentation will be stored at the Directorate of Public Works (DPW), U.S. Army Armor Center and Fort Knox, Fort Knox, Kentucky.

II. PREVIOUS RESEARCH

A number of cultural resource management (CRM) projects have been conducted on the Fort Knox military reservation. Numerous projects also have been conducted in the portions of Bullitt, Meade, and Hardin Counties outside the military reservation, according to the state archeological bibliography and updates. O'Malley et al. (1980) provide an in-depth discussion of research in Bullitt, Hardin, and Meade counties through 1979, and Schenian (1991) and Schenian and Mocas (1992) provide a summary of the research which has taken place since the O'Malley et al. (1980) study was completed. This section will focus on the projects which have been conducted on the military reservation and within the vicinity of the current project area.

There are 112 Hunting Areas on the Fort Knox installation. O'Malley et al. (1980) surveyed approximately one-quarter of each of the 96 hunting areas which did not contain grenade ranges. O'Malley et al. (1980) recorded 415 sites (15Bu295 through 15Bu410, 15Hd109 through 15Hd294, and 15Md103 through 15Md242). Some of these sites were recorded outside the official survey areas, and were discovered while gaining access to the selected survey areas from the closest access road. Some of the sites are isolated finds. O'Malley et al. (1980) did not formally evaluate the National Register status of any of the sites inspected, although opinions are offered on many of the site forms. The purpose of the O'Malley et al. (1980) study was to provide a preliminary inventory of portions of the installation and to develop a database for the predictive modeling of site locations on the installation, and not to evaluate sites for a task-specific construction project. Holmberg (1991) prepared an archival study on the four mill sites (15Md164, 15Md176, 15Md185, and Grahamton) recorded by O'Malley et al. (1980) in the Meade county section of the base. Holmberg's (1991) study includes an appendix (Ball 1991a) delimiting a scope of services for the testing of the mill sites. This testing has not yet been conducted.

A number of projects have been conducted in conjunction with proposed timber harvests. Bush et al. (1988) revisited 15Bu319 and recorded sites 15Bu438 through 15Bu446 and 15Bu485 through 15Bu491 in their survey of timber areas in Hunting Areas 41, 42, and 52. Myers (1990) surveyed 287 acres in Hunting Area 95, recording 15Bu495 through 15Bu502, and describing modern house and garbage dump sites. Mueller (1991) surveyed 270 acres in Hunting Area 1, revisiting 15Md11, 15Md152, and 15Md159, and recording 15Md322 through 15Md325, two historic cemeteries, five prehistoric isolated finds, and three modern structures. Schenian and Mocas (1992) surveyed 600 acres and attempted to relocate and flag previously recorded sites in an additional 300 acres. Their project areas consisted of 14 timber parcels located in Hunting Areas 13, 74, 76, 77, 78, 81 through 84, and 88 through 90. This survey resulted in the recording of sites 15Hd462, 15Hd463, 15Hd464, 15Md326, and one isolated find, and the revisiting of 15Hd140. Attempts were made to relocate 15Hd18, 15Hd113, and 15Hd139, but were unsuccessful. Ruple (1992b) revisited sites 15Md152, 15Md153, and 15Md322 in Hunting Area 1. Ruple (1992a) revisited sites 15Hd184, 15Hd186, and 15Hd249, and made an unsuccessful attempt to relocate 15Hd248, in order to flag avoidance boundaries around the sites in Hunting Area 90 in preparation for logging activities in conjunction with the clearing of the Highway 313 easement. Ruple (1993a) surveyed all 813 acres comprising Hunting Area 4 in preparation for timber harvests in scattered parcels within the Hunting Area.

The improvement of facilities on the Fort Knox installation has resulted in several CRM studies. Sorensen and Ison

(1979) surveyed a proposed telephone building expansion site and access road in the cantonment area, recording no sites. Sussenbach (1990) surveyed three weather radar installation sites, in Hunting Area 23, discovering one prehistoric isolated find. Ruple (1993b) surveyed approximately 10 acres in the cantonment area for a shoreline maintenance project, encountering no sites.

The development, expansion, or improvement of training areas has resulted in a number of CRM studies. Driskell and O'Malley (1979) surveyed the Wilcox Gunnery Range, recording sites 15Bu393 through 15Bu397. Schenian (1991) surveyed 116 acres in portions of Hunting Areas 17, 30, and 41, in conjunction with the Fort Dix realignment, re-examining 15Bu303, and recording 15Bu492, 15Hd459, and two prehistoric isolated finds. Hemberger (1991a) also surveyed approximately 405 acres in seven construction sites in Hunting Areas 17, 24, 31, 32, 34, and 54 in conjunction with the Fort Dix realignment. This study resulted in the recording of 15Hd461 and 15Bu504, the revisiting of 15Bu299 and 15Bu385, and the unsuccessful attempt to relocate previously recorded site 15Hd274. Hemberger (1991b) surveyed a total of 126 acres in four proposed construction areas in the Yano Tank Range, in Hunting Area 93, recording 15Hd460, revisiting 15Hd178, 15Hd182, and 15Hd282, and unsuccessfully attempting to relocate previously recorded site 15Hd283. Hemberger (1992) surveyed a 7.5 acre borrow area in Hunting Area 24, proposed to be used for the consolidation and improvement of two training ranges, and encountered no sites. Schenian and Mocas (1993) studied approximately 133.6 ha (330.2 acres) in 11 proposed rehab areas. The survey resulted in the revisitation of four previously recorded sites (15Md143, 15Md154, 15Md163, and 15Md175) and the recording of 13 additional sites (15Hd482-15Hd487 and 15Md336-15Md342) and five prehistoric isolated finds. One prehistoric site could not be relocated. A portion of one historic cemetery also was located in one of the rehab areas.

In conjunction with land sales, Ball (1987) surveyed approximately 196 acres in the Bullitt County portion of Fort Knox, recording sites 15Bu479 through 15Bu481 and describing one post-1950, or modern, house foundation. Ball (1991b) also surveyed a 19 acre tract near Radcliff prior to disposal of the tract, recording two historic/modern trash dumps which were not assigned state site numbers. Hale (1981) surveyed the Otter Creek Park, recording 15Md243 through 15Md303. Portions of Otter Creek Park, now owned by the City of Louisville, were once part of the Fort Knox military installation, but were disposed of in the 1970's.

Road construction and improvements have resulted in a number of CRM projects on the military reservation. McGraw (1976) surveyed the proposed U.S. 60 bridge and approaches near Otter Creek park, encountering no sites in a 2.35 mile

long corridor which passes through Hunting Areas 7 through 9 and 11 and 12. Fiegal (1982) surveyed the Radcliff Industrial Park access road, including land in Hunting Area 15 as well as off the installation. He recorded 15Hd403 and 15Hd404 off the installation, and revisited 15Hd215 and 15Hd272 on the installation. Webb and Brockington (1986) surveyed the 4.75 mile long Kentucky Highway 1638 realignment corridor, which included portions of Hunting Areas 5 and 7 through 10. They revisited sites 15Md176, and 15Md182 through 15Md185, and recorded 15Md306, 15Md307, and 15Md309. Sites 15Md176, 15Md182, 15Md183, and 15Md307 were all parts of the former town of Garnettsville. The latter three sites were tested (Wheaton 1982), but 15Md176 was not tested because it fell outside the 1638 realignment easement. DiBlasi (1986) surveyed 14 alternative alignments of the approximately 20 km (12.4 miles) long Kentucky Highway 313 corridor, which includes portions of Hunting Areas 80 through 83 and 90, as well as land outside the installation. A total of 27 sites (15Hd406-15Hd430 outside the installation, and 15Hd135, 15Hd184, 15Hd186, 15Hd248, 15Hd249, 15Hd253, 15Hd431, and 15Hd432 on the installation), some previously recorded, were located in the survey corridor. Hixon (1992) tested 15Hd423 and 15Hd426, and archeologists from Wilbur Smith Associates tested six sites on the installation, including 15Hd249 and 15Hd253 (Fenton 1993: personal communication). Schenian (1993) performed a literature search and Phase I survey of six proposed spoil pile areas. Three of the spoil areas had been previously surveyed by DiBlasi (1986) and one by O'Malley et al. (1980), with negative findings. The remaining two spoil areas were field checked by Schenian, with negative results.

In addition to the CRM projects, several sites have been recorded on the military reservation in non-CRM contexts. Funkhouser and Webb (1932) published a catalog of archeological sites in the state, with the information gained primarily through correspondence with amateur archeologists, collectors, and local historians, and included the description of two sites now on the military reservation. These are 15Md10, a mound group on Indian Hill, and 15Md11, a mound near the mouth of Otter Creek (Funkhouser and Webb 1932: 281). Lee Hanson recorded 15Hd17 and 15Hd18, while attending ROTC training camp at Fort Knox in 1961 (Hanson 1961a, 1961b; Dr. R. Berle Clay 1991: personal communication). The wife of a soldier stationed at Fort Knox partially excavated 15Hd273, a mound in Hunting Area 6, in the early 1960's (Anonymous n.d.).

Of greatest relevance to the present study is the work of O'Malley et al. (1980) who, as stated in the introduction, previously surveyed the area containing the proposed landfill expansion. No sites were recorded within the current project area by the O'Malley et al. survey. O'Malley et al. (1980) also surveyed a quadrant of Hunting Area 18 that lies directly to the northwest of the northeast portion

of the current project area. They recorded two sites in this sampling plot--15Hd127 and 15Hd133, small lithic scatters 1250m and 250 m, respectively, northwest of the proposed borrow area. These sites were in environmental settings similar to those formerly present in the proposed landfill and borrow tract. The site surfaces had been severely eroded by tank training, but had not been deeply borrowed like adjacent portions within the current project area.

No sites other than those discussed above are recorded within a 1.0 km radius of the project areas. No archeological sites or standing structures listed on or eligible for listing on the National Register of Historic Places are located in or immediately adjacent to the current project areas.

III. SURVEY PREDICTIONS

Bush et al. (1988:16) noted the following trends for sites recorded on the Fort Knox military reservation:

- 1) Historic sites are the most frequent site type.
- 2) Sites of indeterminate prehistoric cultural-temporal affiliation are the second most common site type.
- 3) Historic sites frequently have prehistoric components, suggesting that both prehistoric and historic peoples were selecting similar topographic features for settlement.

Based on previous archeological research in the area, the history of settlement, and the environmental setting of the proposed landfill and borrow areas, the following results were also expected:

- 1) O'Malley et al. (1980) already had surveyed the southwestern half of the current project area, with negative results; the DPW Environmental Engineer of the (Donnie McGar personal communication 1993) reported that the area has been used for slit trench landfill activities for approximately the last 35 years and was thoroughly disturbed; thus, no intact deposits were expected.
- 2) Soil survey (Arms et al. 1979) and military aerial photographs (1991) of the northeastern half of the project area show extreme alteration of the land surface due to tank training; therefore, little or no intact cultural material was expected.

IV. SETTING AND FIELD METHODS

It lies in the Mississippian Plateau physiographic region of Kentucky (McGrain and Currens 1978:35). The terrain is characterized by an undulating surface with numerous sinkholes and little above ground drainage. The closest stream is Tollgate Creek, which begins 1.2 km east of the proposed borrow pit and flows into Mill Creek 2.2 km farther east.

The landfill tract (Figure 1) studied during the project extended approximately 2300 m northeast to southwest and 730 m northwest to southeast. The southwestern half of the project area, which encompassed the proposed landfill expansion, had been systematically surveyed in a previous study (O'Malley et al. 1980), with negative results, and was examined by drive-by inspection in the current study. The northeastern half had not been previously surveyed, and the remainder of this section will focus on the description of the setting of this area and the field methods used in the survey.

The northeast boundary of the proposed borrow area is formed by a powerline, the northwest boundary is Baker Road, the southwest end is defined by a service road related to previous borrow activities, and the southeast boundary was not marked by any salient features other than the limits of previous borrowing. The proposed borrow pit area had previously been relatively level, with a slight rise to the northeast (Figures 1 and 2), but has been borrowed to a depth of 1-3 m below the original ground surface. Several small, isolated columns of earth and vegetation remained within the deeply borrowed surface, but these areas had been disturbed by tank training and less intensive borrow and fill activities. The sides and surfaces of these columns were observed for evidence of intact deposits, but results were negative in all instances. The entire proposed borrow area and a small adjoining section of the access area between the proposed borrow pit and the proposed expanded landfill were examined by pedestrian reconnaissance. It was determined that the access area also was thoroughly borrowed, so the area was examined by drive-by observation. No evidence of archeological materials or deposits was observed in the entire project area.

V. CONCLUSIONS AND RECOMMENDATIONS

The Phase I literature search of a proposed landfill and borrow area revealed that the southwestern half of the project area had been previously inspected by O'Malley et al.

(1980). No evidence of archeological materials or deposits had been found in the landfill area in this earlier survey, so it was not field inspected in the current study. The proposed borrow pit area and a portion of the access area between the proposed expanded landfill and the proposed borrow pit had not been previously surveyed, and was field inspected in the current study. The inspection of this area resulted in the discovery of no archeological materials or deposits. It is recommended that Directorate of Public Works be permitted to use the project area as proposed.

In the remote possibility that archeological materials are discovered during earthmoving activities all activity in the vicinity of the finds must cease and the State Historic Preservation Officer (502-564-6661) and the DPW Staff Archeologist (502-624-6581) should be contacted, so a representative of those agencies may evaluate the materials. Also, if human remains, regardless of age or cultural affiliation, are discovered, all activity in the vicinity of the remains must cease immediately, and the state medical examiner (502-564-4545) and the appropriate local law enforcement agency (Fort Knox Law Enforcement Command, 502-624-6852) must be contacted, as stipulated in KRS 72.020.

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- 1992 A Phase I Archeological Survey of ca. 600 Acres and Site Flagging in ca. 300 Acres in Various Timber Areas on the Fort Knox Military Reservation, Hardin and Meade Counties, Kentucky. Murray State University, Murray.

Schenian, Pamela A.

- 1993 A Phase I Archeological Survey of Six Proposed Spoil Areas for the Highway 313 Road Construction on the Fort Knox Military Reservation, Hardin County, Kentucky. Directorate of Public Works, Fort Knox.

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- 1993 A Phase I Archeological Survey of ca. 330 Acres in Various Rehab Areas on the Fort Knox Military Reservation, Hardin and Meade Counties, Kentucky. Directorate of Public Works, Fort Knox.

Sorensen, Jerrel H., and Cecil R. Ison

- 1979 A Cultural Resource Reconnaissance of the Proposed South Central Bell Building Expansion and Access Road Construction, Fort Knox, Kentucky. Archeological Report No. 17, Department of Anthropology, University of Kentucky

Sussenbach, Tom

- 1990 Archaeological Report: Negative Find/Isolated Finds Survey: Weather Radar Installation. Program for Cultural Resource Assessment, University of Kentucky, Lexington.

United States Geological Survey

- 1991 Fort Knox, Kentucky-Indiana, 7.5 Minute Topographic Quadrangle.

Webb, Paul A., and Paul E. Brockington, Jr.

- 1986 Final Report: An Archaeological Survey of Areas Potentially Impacted by Reconstruction of State Highway 1638, Meade County, Kentucky, revised and edited by Patrick H. Garrow. Garrow & Associates, Atlanta.

Wheaton, Thomas R., Jr.

- 1987 Archaeological Testing at Garnettsville, Kentucky. Kentucky Highway 1638 Alignment. Garrow & Associates, Atlanta.

APPENDIX A.

RESUMES OF KEY PERSONNEL

Pamela A. Schenian
Staff Archeologist and Project Principal Investigator

Office Address: Directorate of Public Works
ATTN: ATZK-DPW (Schenian)
U.S. Army Armor Center and Fort Knox
Fort Knox, Kentucky 40121-5000
Phone: (502) 624-6581

Date and Place of Birth: January 1, 1959; Waukesha, WI.

Present Position: J.M. Waller & Associates/Fort Knox Staff
Archeologist and Cultural Resource Manager

Education:

A.B.D. in Anthropology, Northwestern University, 1984.
M.A. in Anthropology, Northwestern University, 1982.
A.B. in Anthropology, Bryn Mawr College, 1980.

Previous Employment:

Senior Staff Archeologist, Archeology Service Center,
Department of Sociology, Anthropology, and Social Work, Mur-
ray State University, Murray, KY, November 1991-June 1993;
Staff Archeologist, November 1983-November 1991.

Southern Illinois University, Carbondale, IL: Field
Technician, November-December 1985, September-October 1984.

Illinois State Museum Society, Springfield, IL: Field
Assistant II (Supervisor), summer 1983; Field Technician,
summer 1981.

Center for American Archeology, Kampsville, IL: Field
Technician, summer 1982.

Department of Anthropology, Northwestern University,
Evanston, IL: Teaching Assistant, 1981-82 academic year.

Great Lakes Archeological Research Center, Milwaukee,
WI: Field Technician, summer 1979.

Field Research Experience:

Field experience on prehistoric and historic archeologi-
cal projects in the states of Illinois, Indiana, Kentucky,
New Jersey, South Dakota, Tennessee, and Wisconsin, 1979-
present.

Professional Publications, Reports, Papers and Manuscripts:
84 CRM contract reports on projects in Indiana, Kentucky,
and Tennessee.

1 Homocide site excavation contract report prepared in lieu
of court testimony in Illinois.

7 Papers presented at professional conferences.

5 Publications.

Doctoral candidacy qualifying paper: "A Theory of Individ-
ual Style Variation for Archeological Studies".

Manuscript submitted in partial fulfillment of the M.A.
requirements: "Models of Environmental-Cultural Relation-
ships: Testing with Archeological Evidence".

Stephen T. Mocas
Assistant Staff Archaeologist

Office Address: Directorate of Public Works
ATTN: ATZK-DPW (Mocas)
U.S. Army Armor Center and Fort Knox
Fort Knox, Kentucky 40121-5000
Phone: (502) 624-6581

Present Position: University of Louisville Program of
Archaeology/Fort Knox Assistant Staff Archeologist

Education:

Completed one year of doctoral program, Southern Illinois University, Carbondale, Illinois, 1972.
B.A. in Anthropology, University of Louisville, 1971.

Previous Employment:

Indiana University, Bloomington, Indiana: Staff Archaeologist, September 1991-November 1993.

Murray State University, Murray Kentucky: Staff Archaeologist, November 1991-November 1993.

Jefferson Community College, Louisville, Kentucky.
Anthropology Instructor, August 1981-December 1982.

Louisville School of Art, Louisville, Kentucky: Anthropology Instructor, January-May 1976.

University of Louisville Archaeological Survey, Louisville, Kentucky. Project Director, Field Supervisor, or Research Assistant on various projects, July 1969-January 1977.

State University of New York of Buffalo, Buffalo, New York. Senior Field Worker, June-August 1970.

Field Research Experience:

Field experience, Phase I-III, prehistoric and historic archeological projects in the states of Illinois, Indiana, Kentucky, New York, and Tennessee, 1969-present.

Research Grants:

Six grants for fieldwork and research.

Professional Publications, Reports, Papers and Manuscripts:

3 non-contract site reports on projects
10 CRM contract reports on projects
5 Chapters in additional site reports.
4 Publications, 1 in press.